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STATEMENT OF PROGRESS:

The following list summarizes EREP and support aircraft (A/C) coverage that Weslaco records indicate were obtained in support of our investigation (No. 356). The list is presented, along with comments for verification against records of the Principal Investigators Management Office (PIMO).

Coverage	Date	Location	Comments[a]
SL-2	5/30/73	Starr Co.	190A and S-192 operated. Forbes of PIMO ordered digital tapes in Jan. 74.
A/C Mission 238	5/29/73	Cameron and Starr Co.	Digital tapes ordered 8/24/73. Received 53 digital tapes 10/3/73.
SL-3	8/5/73	S-191 site 385A or 390A	Only S-191 operated (?). Received 2 digital tapes 1/9/74, but can not verify the data site (See text).
SL-4	12/5/73	Cameron Co.	190A and S-192 operated. PIMO has turned in an order for screening products.
A/C Mission 258	12/11/73	Cameron Co.	Photoproducts received 1/12/74 and 1/17/74. Digital tapes ordered 2/8/74.
SL-4	1/28/74	Cameron Co.	Data taken.

[a] S-190, multispectral photographic facility; S-191, infrared spectrometer; and, S-192, 13-channel scanner.

The only data products received that are not listed above are the two digital tapes received 7/25/73. One of those is a binary test tape and the other is a sample data tape.

Effort at Weslaco on the various data sets is summarized in chronological order in the remaining report sections.

SL-2 and Mission 238

The woody vegetation and percent canopy cover have been determined for 6 range sites along the flight line road. A seventh site was deemed too small to identify in S-192 data, but a different location where the same range site occurs has been located. Soil samples have been taken at seven range sites by 0-6, 6-12, 12-18, and 18-24 inch depth intervals, dried, ground and electrical conductivity of the saturation extracts (ECe) has been determined.

The job of reformatting the 53 digital tapes from Mission 238 for compatibility with local programs is about 60% complete. The A/C and EREP MSS spectra from the 7 range sites will be used to train the computer to map the rangelands by range sites and/or soil salinity categories along the flight line.

However, because Starr County was a secondary site it is necessary to discuss with the PIMO the emphasis to be placed on this site, if the data from the prime test site, Cameron County, obtained during SL-4 is useable. It is also planned to emphasize the analysis of EREP data over aircraft data, in accord with NASA instructions.

The SL-2 190A photography has assisted in locating fields and segments in our ERTS-1 investigation. The EREP and ERTS-1 passes occurred within 2 days of each other. The main value of the 190A photography is that it depicts the fields as they existed in 1973, as opposed to the next most recent photography, 1971. Having current information on field boundaries and configuration of individual fields helps to locate them in computer gray maps.

S-191

Two digital computer tapes containing data from Skylab S-191 were received 1/9/74. With the tapes was a computer listing of the data in the first part of each tape and a description of the format and meaning of each byte on the tapes. A computer program was written to rea the tapes on our computer to give information agreeing with the examples in the listing accompanying the tapes. The Data Format Handbook PHO-TR543 and Mr. Joe Snyder (phone 713-483-5482) were consulted to work out some of the problems encountered in reading these tapes.

Each tape contains one file of data composed of 30 records of 2520 bytes each. The first record contains header information identifying the data and giving wavelengths included and number of samples from each of the 6 filter wheel segments along with other pertinent information. The other 29 records are divided into 4 blocks of data; each block contains a "frame time" designation followed by 15 sets of 20 readings representing the 15 channels of data recorded on the original Skylab tape. Multiple recording of the signals from

the filter wheel segments at different gain levels gave the 15 sets of data from 6 segments. On these tapes filterwheel segment 4 had only 3 active wavelengths recorded in the 80 words assigned to segment 4 so all segment 4 has been ignored in this preliminary study.

Each block of data represents a spectrum covered by the channels on each tape. Arranging the samples in the order indicated in the header record in the list of wavelengths, then combining comparable blocks from the two tapes gives a list of radiances measured over each spectrum.

Two problems remain to be solved in reading these tapes. One is getting our computer to read the "frame time" code. The examples given on the printouts accompanying the tapes show the data to be written in double precision scientific notation, i.e. 0.5383300070D 09; our computer reads these bytes as EBCDIC numbers, i.e. 8230 -29549. This is probably due to our computer being a 16 bit machine whereas the tapes were probably written by a 32 bit machine. The other problem is identifying the target areas of the spectra. The frame times are associated with the time indication included on photos from the boresighted camera. We have not received any photos from the boresighted camera so we have nothing to compare with the spectra. There is a group of 24 spectra early in the data that are very similar to each other and they are similar to spectra expected from bare soil so we are assuming until we get further information that these similar spectra represent the soil area (390A) described in our technical proposal. Most of the rest of the spectra vary greatly from one spectrum to the next as if the Skylab crew was searching for our other target, Delta Lake (385A), near by the soil area. We have received telephone information they were not able to locate Delta Lake.

Before we spend more effort on the S-191 data we want to verify with the PIMO that the data belong to our investigation. If they do, we need to receive the boresighted camera photography. We also need assistance to decipher and properly read the "frame time" code.

SL-4 and Mission 258

Photomosaics of the two flight lines in Cameron County have been prepared, the boundaries of the soil associations have been contoured on the photomosaics, and soil samples have been taken, dried, and ground from the 0-12 and 12-24 inch depth intervals at 86 ground locations along the flight lines. The electrical conductivities will not be determined until the quality of the EREP data obtained 12/5/73 and 1/28/74 is known. An effort was made to take the soil samples from representative farmed and indigenous vegetation areas 40 acres or larger in size.

The north one-third of the N-S flight line running from Brownsville (S) to the Arroyo Colorado (N), known as Paredes Line Road, was missing on the duplicate positive transparencies of the on-board MSS film furnished us and used to request Mission 258 digital tapes. Thus digital tapes from this mission corresponding to the available on-board imagery coverage will delete several miles of flight line for which ground truth is available.

In summary, we will be eager to obtain the SL-2 S-192 tapes to determine their quality, look forward to assistance from the PIMO and other NASA personnel on clarifying coverage by the S-191, and await SL-4 photoproducts as an indicator of coverage and data quality by that EREP crew.